

## CLAIMS

1. Concrete pavement for highways and streets of the preset strength safety level with the thickness determined by results of fatigue analysis which is less by 8-10 % than the thickness of this pavement provided by the current Portland Cement Association design procedure due to more complete utilization of flexural strength of concrete than that provided by the current Portland Cement Association design practice of utilization of this strength for carrying out of fatigue analysis of pavement in the framework of said design procedure or with the use of other methods of fatigue analysis according to the requirements of the customer, more complete utilization of flexural strength of concrete considered as a random value means the use of values of modulus of rupture exceeding the mean value of flexural strength for thickness design of pavement, mix design of concrete of pavement being determined by value of modulus of rupture (MR) required by the thickness design according to said design procedure, fatigue analysis of pavement is carried out with consecutive use of few values of modulus of rupture of concrete (MR) considered corresponding to the one value of specified compressive strength of this concrete  $f_c'$ , the least of these few values just corresponding to this value of 28-day specified compressive strength is the value of modulus of rupture (MR) required by thickness design of this pavement according to said design procedure, any of these few values of modulus of rupture of concrete (MR) can be used for fatigue analysis of pavement of the certain stress ratio factor if strength safety of this pavement designed with the use of this value of modulus of rupture corresponds to preset strength safety of pavement.

2. Concrete pavement of claim 1 for highways and streets of uninterrupted traffic flow and high volumes of truck traffic of the preset strength safety level corresponding to strength safety index  $\beta$  equal at least to about 3, with the stress ratio factor not exceeding 0.5, fatigue analysis of pavement should be carried out with the consecutive use of the three values of modulus of rupture of concrete (MR) with the difference of 50 psi corresponding to the one value of specified compressive strength of this concrete  $f_c'$ , the least of these three is the value of modulus of rupture (MR) required by the

thickness design of pavement according to the current Portland Cement Association thickness design procedure, any of these three values of modulus of rupture of concrete (MR) can be used for fatigue analysis of pavement of certain stress ratio factor if strength safety of this pavement designed with the use of this value of modulus of rupture corresponds to strength safety index  $\beta$  equal at least to about to 3.0.

3. Concrete pavement of claim 1 for highways and arterial streets with moderate volumes of truck traffic of the preset strength safety level corresponding to strength safety index  $\beta$  equal at least to about 2.5, fatigue analysis of pavement should be carried out with the consecutive use of the three values of modulus of rupture of concrete (MR) with the difference of 50 psi corresponding to the one value of specified compressive strength of this concrete  $f_c'$ , the least of these three is the value of modulus of rupture (MR) required by thickness design of pavement according to the current Portland Cement Association thickness design procedure, any of these three values of modulus of rupture of concrete (MR) can be used for fatigue analysis of pavement of certain stress ratio factor if strength safety of pavement designed with the use of this value of modulus of rupture corresponds to strength safety index  $\beta$  equal at least to about to 2.5.

4. Concrete pavement of claim 1 for roads, residential streets, and other streets with low volumes of truck traffic of the preset strength safety level corresponding to strength safety index  $\beta$  equal at least to about 2.0, fatigue analysis of pavement should be carried out with consecutive use of the three or less values of modulus of rupture of concrete (MR) with the difference of 50 psi corresponding to the one value of specified compressive strength of this concrete  $f_c'$ , the least of these three is the value of modulus of rupture (MR) required by thickness design of pavement according to current Portland Cement Association thickness design procedure, any of these three values of modulus of rupture of concrete (MR) can be used for fatigue analysis of pavement of certain stress ratio factor

if strength safety of pavement designed with the use of this value of modulus of rupture corresponds to strength safety index  $\beta$  equal at least to about to 2.0.